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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/495,407 | 01/31/2000 | Keith Stivers | OSI-2300/2310 | 4823 |

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EXAMINER

WHITE, CARMEN D

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

3714

DATE MAILED: 10/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/495,407

Applicant(s)

STIVERS ET AL.

Examiner

Carmen D. White

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-83 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-83 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4-548
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Abstract

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Objections

Claims 77-82 (now 77-83) are objected to because of the following informalities: the claims are misnumbered. Appropriate correction is required.

Claims have 77-83 have been misnumbered. Applicant has included two claims numbered 77. For purposes of the office action, the examiner refers to the claims in the renumbered format, with the second claim 77 renumbered as 78 and the claims that follow are renumbered accordingly (79-83). Correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-33, 41-42, 44, 47-48, 50-53, 64-68 and 74-83 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-6 and 83 recite "and/or" inline 1 of the claim. The use of "and/or" makes the claim language ambiguous. Therefore, it makes it difficult to ascertain the scope of the claims.

Claims 1-6 and 83 recite the limitations "the plane" in line 4 and "the impact position" in line 7. There is insufficient antecedent basis for this limitation in the claim.

Claim 4 recites the limitation "the take away swing path" and "the downswing path" in lines 1-2 and 3. There is insufficient antecedent basis for these limitations in the claim.

Claims 7-33 and 83 recite the limitation "the plane" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claims 8-10 recite the limitation "said swing path" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites "the array" in line 2. It is not clear whether it is in reference to the first or second array. Therefore there is improper antecedent basis for this limitation.

Claims 17-18 recite the limitation "said linear extrapolations" in lines 2-3. This limitation is referred to in the singular only in the previous claims, from which the claims depend. There is insufficient antecedent basis for this limitation in the claim.

Claim 18 recites the limitation "said markings" in lines 2-3. This limitation is referred to in the singular only in the previous claims, from which claim 18 depends. There is insufficient antecedent basis for this limitation in the claim.

Claim 23 recites the limitation "said circumferential extrapolations" in lines 2-3. This limitation is referred to in the singular only in the previous claims, from which the claim depends. There is insufficient antecedent basis for this limitation in the claim.

Claims 27-28 recite the limitation "said circumferential extrapolations" in line 3. This limitation is referred to in the singular only in the previous claims, from which the claims depend. There is insufficient antecedent basis for this limitation in the claim.

Claim 29 recites the limitation "the group" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims 41-42 recite the limitation "said linear extrapolations" in lines 2-3. This limitation is referred to in the singular only in the previous claims, from which the claims depend. There is insufficient antecedent basis for this limitation in the claim.

Claim 44 recites the limitation "said circumferential extrapolations" in lines 2-3. This limitation is referred to in the singular only in the previous claims, from which the claim depends. There is insufficient antecedent basis for this limitation in the claim.

Claims 47-48 recite the limitation "said circumferential extrapolations" in lines 2-3. This limitation is referred to in the singular, only, in the previous claims, from which the claims depend. There is insufficient antecedent basis for this limitation in the claim.

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Claims 50-52 recite the limitation "said circumferential extrapolations" in line 3. This limitation is referred to in the singular, only, in the previous claims, from which the claims depend. There is insufficient antecedent basis for this limitation in the claim.

Claim 53 recites the limitation "the group" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims 64-68 and 77-83 recite the limitation "the geometric center" in line 9. There is insufficient antecedent basis for this limitation in the claim.

Claims 66-68 recite the limitation "the diameter" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims 74-83 recite the limitations "the speed" and "the transfer efficiency" in lines 12 and 15, respectively. There is insufficient antecedent basis for this limitation in the claim.

Claims 78-82 recite the limitation "the plane" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 80 recites the limitation "said markings" in line 2. There is insufficient antecedent basis for this limitation in the claim. Also, claim 77 recites "said markings are calculates" in line 2 of the claim. There appears to be a typographical error, in that "are" should be changed to --and--.

Claim 82 recites the limitation "said three-dimensional extrapolation" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 83 recites the limitation "the relative orientation" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 7-9, 69-73 and 83 are rejected under 35 U.S.C. 102(b) as being anticipated by ***Chang*** et al (5,342,054).

Regarding claims 1-3, 7-9, 69 and 83, Chang teaches an apparatus for monitoring a swing path of a golf club head at or near an impact location with a golf ball during a golf swing that comprises a first array of sensors arranged at an angle to the plane of the golf swing and proximate to the impact location (Fig. 1, #16, #22); a second array of sensors also arranged at an angle to the swing plane and spaced apart from the first array behind the impact position along the swing path (Fig. 1, #16, #20); an image capture device including a camera for capturing two or more images of the golf ball after impact with the golf club head (Fig. 1, #30, #28, #26, #24; col. 2, lines 23-25; Fig. 7); a processor for receiving signals indicative of a temporal profile of which sensors the golf club head is over for the duration of the swing and for determining one or more dynamic parameters of the golf ball based on said two or more images and for calculating one or more flight parameters of a total flight path of said golf ball based on said one or more dynamic parameters (col. 2, lines 42-50; Fig. 2; Fig. 1, #32).

Regarding claim 70, 72-73, Chang teaches all the limitations of the claim as discussed above. Chang further includes the feature of the sensors triggering the capturing of the images by the camera (col. 2, lines 27-31).

Regarding claim 71, Chang teaches all the limitations of the claim as discussed above. Chang further includes the feature of the sensors being photosensors (col. 3, lines 31-33).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-6, 10, 74 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Chang*** et al (5,342,054).

Regarding claims 4-6 and 10, Chang teaches all the limitations of the claims as discussed above. While Chang teaches the capture and display of the golfer's swing path (col. 1 lines 64-68 through col. 2, lines 1-5; Fig. 4 and Fig. 7), Chang is silent regarding the explicit determination of the take away swing path and the downswing path and club head angle as the club is moved between the arrays. However, it would have been obvious to a person of ordinary skill in the art at the time of the invention to include the extraction of this data from the already present swing path data of Chang in order to provide a more specific analysis of the golfer's swing. This would provide the

golfer with additional feedback that would assist him/her in improving his/her game of golf, which is the objective the Chang invention seeks to achieve.

Regarding claims 74 and 76, Chang teaches all the limitations of the claims as discussed above. Chang further teaches the club head's speed (col. 8, lines 46-47 and figure 7). However, Chang is silent regarding the calculation of the transfer efficiency of the club head. It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the processor of Chang to calculate this feature. The processor of Chang is functionally capable of computing this data using the input supplied to the processor by the sensors and cameras. The calculation of this data would provide the golfer with additional feedback that would assist him/her in improving his/her game of golf, which is the objective the Chang invention seeks to achieve.

Claims 11-68, 75 and 77-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Chang** et al (5,342,054) in view of **Sullivan** et al (4,158,853).

Regarding claim 11, Chang teaches all the limitations of the claims. Chang is silent on the feature of the golf ball having a marking that is at least partially in view of the camera. In an analogous golf training apparatus, Sullivan teaches this feature (col. 1, lines 24-37). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Chang to include this feature to provide additional, more accurate input regarding the flight of the golf ball in order to improve the feedback to the golfer to assist him/her in enhancing his/her golfing results.

Regarding claims 12-15, 34-39 and 77-79, Chang and Sullivan teach all the limitations of the claims as discussed above. While Sullivan teaches various sizes and

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materials for use in ball markings to obtain statistical data of the ball's flight (col. 1 lines 35-68 through col. 2 lines 1-29), Sullivan lacks disclosing the placement of the marks as taught in the instant claims. It would have been obvious to a person of ordinary skill in the art at the time of the invention, as a matter of choice, well within the functional capability of the invention of Sullivan, to place the markings on the ball in the areas taught by the instant claims. This would increase the chances of the markings obtaining higher visibility by the cameras. This would, in turn, result in more accurate output of the ball's statistical data.

Regarding claims 16-18, 25, 32, 40-42, 49 and 80, Chang and Sullivan teach all the limitations of the claims as discussed above. Sullivan further teaches the use of the images of the ball with markings to calculate the aerodynamic characteristics of the ball that includes ball spin in three dimensions (col. 3, lines 31-41). However, Sullivan is silent regarding the feature of the calculation of a linear extrapolation of the marking in order to obtain spin data. It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Sullivan to obtain the linear extrapolation from the position data that is obtained in the processor of Sullivan (Fig. 2, #24, #26 and #34) in order to increase the accuracy of the spin data.

Regarding claims 19-24, 26-31, 33, 43-48, 50-59, 75 and 81-82, Chang and Sullivan teach all the limitations of the claims as discussed above. Sullivan further teaches the use of the images of the ball with markings to calculate the aerodynamic characteristics of the ball that includes ball velocity in three dimensions (col. 3, lines 31-41). Sullivan is silent regarding the feature of the calculation of the circumferential

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extrapolation in order to calculate the three-dimensional velocity of the ball. It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Sullivan to calculate velocity by calculating the circumferential extrapolation data, using the ball dimensions obtained in Sullivan, in order to increase the accuracy of the velocity data.

Regarding claims 60-68, Chang and Sullivan teach all the limitations of the claims as discussed above. While Chang teaches the calculation of various parameters of the ball and club, such as speed and angle, Chang is silent on the calculation of three-dimensional velocity based in part on three-dimensional spatial position determination. In an analogous golf training apparatus, Sullivan teaches this feature (col. 3, lines 31-40; Fig. 4). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Chang to include this feature that is taught by Sullivan to provide additional feedback to the golfer in order to increase the golfer's accuracy.

Pertinent Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lubell et al, Burns, Aoyama et al and Petermeier et al teach golf swing monitoring devices.

USPTO Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carmen D. White whose telephone number is 703-308-

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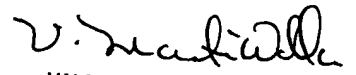
5275. The examiner can normally be reached on Monday through Friday, 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Hughes can be reached on 703-308-1806. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7768 for regular communications and 703-305-3579 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1078.



C. White
Patent Examiner, 3714



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